

REMARKS

Claims 1 to 45 are currently pending in this application. Claims 1 to 45 have been rejected. Applicants have amended claims 1, 5, 16, 19, 20, 23, 29, 33, 40, and 43. No new matter has been added; full support for the amendments being found in the specification and drawings as filed. In view of the above amendments and the following remarks, Applicants submit that this application is in condition for allowance. Accordingly, reconsideration and a timely indication of allowance are respectfully requested.

Claims Amendments

Applicants have amended claims 1 and 29 to recite “receiving one or more charge parameters for the battery including a charge schedule” and “wherein the charge return model is constrained by the charge schedule.” Both of these limitations are found in claims 5 and 33 as filed. Applicants have amended claims 16 and 40 to recite “one or more charge parameters including a charge schedule.” This limitation was found in claims 19 and 43 as filed. Applicants have amended claim 20 to recite “one or more charge parameters including a charge schedule” and “wherein the charge return module is constrained by the charge schedule.” Both of these limitations are found in claim 23 as filed.

Additionally, Applicants have amended claims 16, 20, and 40 to state “a user input interface.” Full support for this amendment is found in the specification as filed, for example, in paragraph 38.

No new matter has been added, full support for all of the amendments being found in the specification and drawings as filed. Entry of these amendments is respectfully requested.

The Present Invention

The present invention comprises a system and method for modeling or simulating an application environment in order to analyze the effect of a particular battery and/or charger within the application environment. As explained on page 2 of the specification, many industrial

applications use electric powered vehicles for consecutive shifts without an extended recharging period. There may be various breaks for coffee, meals, or shift changes during which recharging can take place. The cyclical use of equipment in an industrial application means that the energy needs are somewhat consistent over a cycle, that there is a fixed amount of time available for recharging, and that it is important that the equipment remain operating without requiring battery changes. The present invention is directed to a method for calculating the energy needs and providing an appropriate charge return model for a particular electric vehicle in a particular industrial use.

Rejections Under 35 U.S.C. § 102(b)

The Examiner rejected claims 1-4, 12-18, 20-22, 29-32, and 36-42 under 35 U.S.C. § 102(b) as being anticipated by Joko et al. (U.S. Patent No. 5,939,861). The Examiner's rejection has been carefully considered but is traversed for the reasons that follow.

All of independent claims 1, 16, 20, 29 and 40, as amended, require that the charge parameters for the battery include a charge schedule. Applicants respectfully submit that the amendments to claims 1, 16, 20, 29 and 40 render these claims patentable over Joko et al. In the 103(a) rejection of claim 5, the Examiner states that Joko et al. do not expressly disclose that the charge parameters include a charge schedule. Moreover, Applicants respectfully submit that no charge schedule is suggested by Joko et al.

Joko et al., are concerned with observing the state of a battery in a hybrid gasoline-electric automobile. More specifically, Joko et al. disclose and teach a means for calculating the time integral I of the charging and discharging current (i) (Column 12, ll. 53-58). According to Joko et al., this information is used to compare the measured transfer characteristic of a specific battery in use to a set of stored characteristics to evaluate the condition of the battery and prevent battery damage through overcharging (Column 18, ll. 52-58). The hybrid vehicles focused on by Joko et al. do not have set discharge and charge schedules, because the vehicles can travel different routes with highly variable opportunities for regenerative braking. Therefore, Joko et

al. do not consider a charge schedule, but rather focus on the state of the battery.

As compared to the subject invention, Joko et al. do not disclose, teach or suggest “receiving one or more charge parameters for the battery including a charge schedule” or “applying a charge return model based upon said charge parameters” or “wherein the charge return model is constrained by the charge schedule” as recited in independent claims 1 and 29. Additionally, Joko et al. do not disclose, teach or suggest “receiving a plurality of parameters including one or more charge parameters including a charge schedule” as recited in claim 16. Additionally, Joko et al. do not disclose, teach or suggest “receiving application parameters and one or more charge parameters including a charge schedule” or “a component for applying a charge return model based on said charge parameters” or “wherein the charge return model is constrained by the charge schedule” as recited in claim 20. Additionally, Joko et al. do not disclose, teach or suggest “computer executable instructions for receiving application environment parameters through a user input interface, including one or more charge parameters including a charge schedule” as recited in claim 40.

Additionally, Applicant respectfully submits that Joko et al. fail to disclose, teach or suggest “a user input interface” as recited in claims 16, 20, and 40, as amended. The Examiner states that Joko et al. teaches a user interface as 26 in Fig. 15. However, as seen from Fig. 15, reference numeral 26 is directed to a display means with no user input interface for entry of one or more charge parameters.

Accordingly, Applicant respectfully submits that claims 1, 16, 20, 29 and 40, as amended, are patentable over Joko et al., because Joko et al. do not teach or suggest each and every feature recited in any of claims 1, 16, 20, 29 and 40. Claims 2 to 4, 12 to 15, 17, 18, 21, 22, 31, 32, 36 to 39, 41 and 42 depend from claims 1, 16, 20, 29 and 40 and by definition contain all of the limitations of the independent claim upon which they depend. Accordingly, Applicant respectfully submits that claims 2 to 4, 12 to 15, 17, 18, 21, 22, 31, 32, 36 to 39, 41 and 42 are patentable over Joko et al. for the reasons given above for claims 1, 16, 20, 29 and 40, as well as because of the additional limitations contained therein.

Accordingly, Applicant respectfully requests that the rejection of claims 1-4, 12-18, 20-22, 29-32, and 36-42 under 35 U.S.C. §102(b) be withdrawn.

Rejections Under 35 U.S.C. § 103(a)

Claims 5, 19, 23, 33 and 43-44

The Examiner rejected claims 5, 19, 23, 33 and 43-44 under 35 USC § 103(a) as being unpatentable over Joko et al. in view of Adams (U.S. Patent No. 4,435,675). The Examiner's rejection has been carefully considered but is traversed for the reasons that follow. Moreover, because limitations of claims 5, 19, 23, 33 and 43 have been added to independent claims 1, 16, 20, 29 and 40, Applicants respectfully address this rejection with regard to independent claims 1, 16, 20, 29 and 40.

Applicants respectfully submit that one skilled in the art would have no motivation to combine the teachings of Joko et al. with Adams. The Examiner states that it would have been obvious to a person having ordinary skill in the art at the time of this invention to combine Adams's battery charging system with a charge schedule and Joko et al.'s battery control system to maximize the charge provided to the battery for a given period of time. Applicants respectfully submit that the charge schedule of Adams cannot be combined with the hybrid vehicle system of Joko et al, because regenerative braking, which is the charge mechanism of Joko et al. is unscheduled and highly variable in duration. Thus, there is a lack of suggestion to combine the references.

The Examiner states that Joko tracks a time interval to know if the charge supplied by regenerative braking over a period of time will possibly over charge the battery. However, this is different than generating a charge return model based upon charge parameters including a charge schedule. Applicants respectfully submit that one skilled in the art would have no motivation to modify the system of Joko et al. to consider a charge schedule, because the system of Joko et al. is specifically designed for a system where the charge schedule duration is unknown. Therefore,

modification of Joko et al. to include a charge schedule would change the principal of operation of Joko et al.

Additionally, as with Joko et al., Adams fails to teach or suggest “a user input interface” as recited in claims 16, 20, and 29. Adams is directed to a battery charging system that determines the state of charge of the battery at the commencement of charging and selects a charging schedule based on the state of charge of the battery. Therefore, Applicant respectfully submits that Adams fails to remedy the defects of Joko et al. regarding claims 16, 20, and 29. Thus, even if one skilled in the art were to combine the teachings of Joko et al. and Adams, the resulting apparatus or methods would not be the same as those defined by claims 19, 23, and 33, and therefore these claims are not obvious.

Accordingly, Applicant respectfully requests that the rejection of claims 5, 19, 23, 33 and 43-44 under 35 USC § 103(a) be withdrawn. Additionally, Applicants respectfully submit that claims 1, 16, 20, 29 and 40 are patentable over Joko et al. and Adams taken alone or in combination.

Claims 6-9 and 34

The Examiner rejected claims 6-9 and 34 under 35 USC § 103(a) as being unpatentable over Joko et al. in view of Notten et al. (U.S. Patent No. 6,016,047). The Examiner’s rejection has been carefully considered but is traversed for the reasons that follow.

As discussed above, Joko et al. do not disclose, teach or suggest all the features as recited in independent claims 1 and 29, as amended, which are the respective base claims for these dependent claims. Applicants respectfully submit that Notten et al. fail to remedy the defects of Joko et al. In view of the differences between Joko et al. and the present invention as defined by the claims, it is submitted that even if one skilled in the art were to combine the teachings of Joko et al. and Notten et al., the resulting apparatus or methods would not be the same as those defined by claims 6-9 and 34, and therefore these claims are not obvious.

Accordingly, Applicant respectfully requests that the rejection of claims 6-9 and 34 under 35 USC 103(a) be withdrawn.

Claim 10

The Examiner rejected claim 10 under 35 USC 103(a) as being unpatentable over Joko et al. in view of Notten et al. (U.S. Patent No. 6,016,047) and further in view of L. Martin (Journal of Heat Transfer, Nov. 1991, Vol. 113/899). The Examiner's rejection has been carefully considered but is traversed for the reasons that follow.

As discussed above, Joko et al. do not disclose, teach or suggest all the features as recited in independent claim 1, as amended, which is the base claim for dependent claim 10. Applicants respectfully submit that Notten et al. and L. Martin fail to remedy the defects of Joko et al. with regard to claim 1. In view of the differences between Joko et al. and the present invention as defined by claim 1, it is submitted that even if one skilled in the art were to combine the teachings of Joko et al., Notten et al. and Martin, the result would not be the same as the method defined by claim 10, and therefore claim 10 is not obvious.

Accordingly, Applicants respectfully request that the rejection of claim 10 under 35 USC § 103(a) be withdrawn.

Claim 11

The Examiner rejected claim 11 under 35 USC §103(a) as being unpatentable over Joko et al. in view of Hughes et al. (U.S. Patent No. 6,326,765). The Examiner's rejection has been carefully considered but is traversed for the reasons that follow.

As discussed above Joko et al. do not disclose, teach or suggest all the features as recited in independent claim 1, as amended, which is the base claim for dependent claim 11. Applicant respectfully submits that Hughes et al. fail to remedy the defects of Joko et al. In view of the differences between Joko et al. and the present invention as defined by claim 1, it is submitted that even if one skilled in the art were to combine the teachings of Joko et al. and Hughes et al.,

the result would not be the same as the method defined by claim 11, and therefore claim 11 is not obvious.

Additionally, Applicants respectfully submit that one skilled in the art would have no motivation to combine Joko et al. with Hughes et al. Hughes et al. is directed to an electric scooter with an on-board charging system. The Examiner states that it would have been obvious to a person having ordinary skill in the art at the time of this invention to use Hughes et al.'s charging method, which according to the Examiner includes using an IVI profile with Joko et al.'s device to provide a full charge to the battery in less time than typical charging methods. Applicant respectfully disagrees.

As explained in Fig. 3 and in the specification in col. 2, line 1 to col. 3, line 17, Hughes et al.'s charging method referred to by the Examiner is used with a steady power source, namely a fuel cell for charging a battery back. Applicant submits that the charging method of Hughes et al. cannot be combined with the hybrid vehicle system of Joko et al, because regenerative braking, which is the charge mechanism of Joko et al. is unscheduled and highly variable in duration. Thus, there is a lack of suggestion to combine the references.

Accordingly, Applicants respectfully request that the rejection of claim 11 under 35 USC § 103(a) over Joko et al. in view of Hughes et al. be withdrawn.

The Examiner rejected claim 11 under 35 USC §103(a) as being unpatentable over Joko et al. in view of Aker et al. (U.S. Patent No. 6,803,746). The Examiner's rejection has been carefully considered but is traversed for the reasons that follow.

As discussed above Joko et al. do not disclose, teach or suggest all the features as recited in independent claim 1, as amended which is the base claim for dependent claim 11. Applicants respectfully submit that Aker al. fail to remedy the defects of Joko et al. In view of the differences between Joko et al. and the present invention as defined by claim 1, it is submitted that even if one skilled in the art were to combine the teachings of Joko et al. and Aker et al., the

result would not be the same as the method defined by claim 11, and therefore claim 11 is not obvious.

Additionally, Applicants respectfully submit that one skilled in the art would have no motivation to combine the battery control system of Joko et al. with the high capacity charger taught by Aker et al. Applicants respectfully submit that one skilled in the art would not be motivated to combine the regenerative braking system of Joko et al., which is unscheduled and highly variable in duration, with the high capacity charger taught by Aker et al. Thus, there is a lack of suggestion to combine the references.

Accordingly, Applicant respectfully requests that the rejection of claim 11 under 35 USC § 103(a) over Joko et al. in view of Aker et al. be withdrawn.

Claims 24-27

The Examiner rejected claims 24-27 under 35 USC §103(a) as being unpatentable over Joko et al. in view of Adams and further in view of Hughes et al. The Examiner also rejected claims 24-27 under 35 USC §103(a) as being unpatentable over Joko et al. in view of Adams and further in view of Aker et al. The Examiner's rejections have been carefully considered but are traversed for the reasons that follow.

As discussed above, Joko et al. do not disclose, teach or suggest all the features as recited in independent claim 20 which is base claim for these dependent claims. As discussed above, Adams, Hughes et al., and Aker et al. fail to remedy the defects of Joko et al. Moreover, as discussed above, Applicants respectfully submit that one skilled in the art would have no motivation to combine the system of Joko et al. with Adams, Hughes et al., or Aker et al.

Accordingly, Applicants respectfully request that the rejections of claims 24-27 under 35 § USC 103(a) over Joko et al. in view of Adams and further in view of Hughes et al. and over Joko et al. in view of Adams and further in view of Aker et al. be withdrawn.

Claim 28

The Examiner rejected claim 28 under 35 USC § 103(a) as being unpatentable over Joko et al. in view of Adams in view of Hughes et al. in further view of Koenck (U.S. Patent No. 5,463,305) and as being unpatentable over Joko, Adams, and Aker et al. in further view of Koenck. The Examiner's rejections have been carefully considered but are traversed for the reasons that follow.

As discussed above, Joko et al. do not disclose, teach or suggest all the features as recited in independent claim 20 which is base claim for this dependent claim. As discussed above, Adams, Hughes et al., and Aker et al. fail to remedy the defects of Joko et al. Moreover, as discussed above, Applicants respectfully submit that one skilled in the art would have no motivation to combine the system of Joko et al. with Adams, Hughes et al., or Aker et al. Applicants respectfully submit that Koenck fails to remedy the defects of Joko et al. Moreover, Applicants respectfully submit that the need to rely on a combination of four references as a basis for obviousness amounts to a hindsight analysis which in itself supports a finding that the invention is not obvious.

Accordingly, Applicants respectfully request that the rejections of claim 28 under 35 USC §103(a) over Joko et al. in view of Adams in view of Hughes et al. in further view of Koenck and over Joko, Adams, and Aker et al. in further view of Koenck be withdrawn.

Claim 35

The Examiner rejected claim 35 under 35 USC §103(a) as being unpatentable over Joko et al. in view of Notten et al. and further in view of Hughes et al. The Examiner also rejected claim 35 under 35 USC §103(a) as being obvious over Joko et al. in view of Notten et al., and further in view of Aker et al. The Examiner's rejections have been carefully considered but are traversed for the reasons that follow.

As discussed above, Joko et al. do not disclose, teach or suggest all the features as recited in independent claim 29 which is the base claim for dependent claim 35. As discussed above,

Notten et al., Hughes et al. and Aker et al. all fail to remedy the defects of Joko et al. Moreover, as discussed above, Applicants respectfully submit that one skilled in the art would have no motivation to combine the system of Joko et al. with Hughes et al. or Aker et al.

Accordingly, Applicants respectfully request that the rejections of claim 35 under 35 USC §103(a) over Joko et al. in view of Notten et al. and further in view of Hughes et al. and over Joko et al. in view of Notten et al., and further in view of Aker et al. be withdrawn.

Claim 45

Finally, the Examiner rejected claim 45 under 35 USC § 103(a) as being unpatentable over Joko et al. in view of Adams in further view of Koenck. The Examiner's rejection has been carefully considered but is traversed for the reasons that follow.

As discussed above, Joko et al. do not disclose, teach or suggest all the features as recited in independent claim 40 which is the base claim for dependent claim 45. As discussed above, Adams and Koench fail to remedy the defects of Joko et al. Moreover, as discussed above, Applicants respectfully submit that one skilled in the art would have no motivation to combine the system of Joko et al. with Adams.

Accordingly, Applicants respectfully request that the rejection of claim 45 under 35 USC §103(a) over Joko et al. in view Adams in further view of Koench be withdrawn.

CONCLUSION

In view of the above remarks, Applicants respectfully submit that this application is in condition for allowance. Accordingly, reconsideration and a timely indication of allowance are respectfully requested.

If the Examiner believes a telephone conference would aid in the prosecution of this application, then the Examiner is invited to contact the undersigned at the below-listed telephone number.

This Amendment is being filed with a Request for Continued Examination. A fee of \$790 is believed due for the Request for Continued Examination. The Commissioner is authorized to charge this fee and any other fees due with this Response to Deposit Account No. 19-2090.

Respectfully submitted,
SHELDON & MAK PC

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